

On the Logic and Theory of Science : preface,
warning, first page. – Cavailles with Bachelard,
Canguilhem, Ehresmann.

Camille Akmut (trans., int.)

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Lady of flowers brings thorns on roses

The legendary French philosophers and historians of science : Jean Cavailles and Georges Canguilhem, and (their elder) Gaston Bachelard... Like thorns on a rose, or the flower itself?

“*A scientific discipline cannot construct itself and progress without seeking a radical questioning of its original purpose*”, Bachelard wrote as introduction for the second edition of *On the Logic and Theory of Science*.

This chapter of science, rediscovered infinitely many times, and every time seemingly anew, computer science has not reached yet.

This important lesson computer scientists have not learned yet, that would enable them to reexamine their most basic assumptions.

‘*What is computer science?*’, the original question of computer science, has long fallen out of fashion, (to be) succeeded now by ‘*Why* computer science?’ Defended scientificity followed by debated identity; These are the two crises of computer science – in short.

Even the simplest of questions are enough to bring an end to their temporary certitudes. (To say nothing of the perennial arrogance of some...)

Certain sciences produce results rapidly, but is this perhaps only so because – as Descartes had suggested of mathematics – they solve the easiest of problems?

Let them consider any number of these problems — as if for the first time...

PREFACE TO THE SECOND EDITION

Gaston Bachelard

(1960)

Despite its difficulty, this book has reached a many places and a many hands [and a many hearts too] [*a fait son chemin...*] With the first edition long out of print [*epuise*], a second edition had become necessary.

This second edition is the exact, word-for-word reproduction [*textuelle*] of the first one, which had been put together by Georges Canguilhem and Charles Ehresmann¹ with faithful care.

The modern logician likes to think of all things preceding the publication of Whitehead and Russell's *Principia Mathematica* as "prehistory".

Since then logic, as a field of study, has developed so rapidly, and in directions so diverse, that one is enabled to say, without giving in to skepticism, that any attempt of synthesis is condemned to "rapid aging".

We might as well say it : these days one cannot really separate logic from topicality.²

And, yet the book written almost twenty years ago by Cavailles, in 1942, still remains of current interest, as much for the logician of 1960 as for the philosopher.

This book, entirely imbued with the new culture of Logic³, had achieved something important : the fundamental interrogations of philosophy had been imposed back on logicians.

In a way, modern Logic has done nothing else but follow the path common to all sciences, being that a scientific discipline cannot construct itself and progress [*se perfectionner*] without seeking a radical questioning of its original purpose [*sense originel*].

Husserl had recognized that what made science possible was, thankfully, not insightful reflection, but scientific instinct.

The scientist, in order to create, does not need to bother with the preliminaries of philosophical critique. But, Logic, being not only science but also theory of science, occupies a specific position and cannot pretend to this idea of a "hidden reason".

At the bottom of all of this is the struggle – fought out inside the same discipline – of two rivals : a science keen to leave philosophy behind, and a philosophy that sometimes is ignorant and refuses instruction.

¹Trans. note : Mathematician (b. 1905 Strasbourg), former student of the ENS (around the same time as Cavailles, and Canguilhem), Bourbaki group member, PhD thesis on topology under Elie Cartan...

²Trans. note : hardous passage for the translator, both on account of "*actualite*" and "*logique*" — current events and actual, realized state of things, on one hand; science and common sense logic, on the other. Is Bachelard playing with their various meanings here? If so : meaningful choice in the context of Cavailles, whose work (on Logic) and Resistance actions could not be considered separately, Canguilhem argued in *Life and death*.

³Going forward we denote the science with a capital letter.

This problem of Logic, can we express it more directly, or even definitively, if we dare say so, than Cavailles had done when he wrote : "*Le renvoi au technique est une echappatoire*" [appr. The call back to the technical is an escape], and a few lines later, with reference to Godel's results [concerning proofs] : "Is this the revenge of the technical, to reverse its operations inside an abstract beyond itself?"

This book, in which a vast mathematical and logic culture is constantly implied, remains close to the philosopher.

Certainly, the reader will need to open a book or two [*s'instruire*] if they wish to make sense of Cavailles' various developments⁴, often rendered enigmatic by their concision.

But, once overcome the indifference towards the problems of deductive science, the philosopher should feel at home⁵.

They'll never have to face again a history of blank facts [mere], no more than a chatty interpretation.

Nothing exterior, nor accidental will loosen this questioning [*"interrogation"*] of the essence and destination of science.

While writing this text, Cavailles wrote to Lautman : "It's with Husserl, and also in part against Husserl that I'm trying to define myself." [*"en fonction de"*]

Since the publication of the first edition, various studies on phenomenology and translations of Husserl into French have seen the light of day – they probably owed something to Cavailles, we can speculate.

(...)

It was far away from books, in the solitude of a prison, that Cavailles wrote this book.

⁴Trans. note for trans. : "*formule(s)*", possibly antiquated, meaning expression or equation, or both.

⁵Trans. note : "*chez lui*", followed by *he* in the next line. Bachelard assumed masculine gender as the default form (as certain contemporary authors of textbooks on Networking do...).

EDITORS' WARNING
Georges Canguilhem, Charles Ehresmann
(1947)

(...)

We should ask how Cavailles was able – in a prison – to write a book in which references to sometimes very erudite works abound. General de Lattre de Tassigny was then in charge of the military region around Montpellier. He knew and had esteem for Cavailles. By his authorisation, friends were allowed to visit and bring him books.

Albert Lautman had traveled from Toulouse to Montpellier for that purpose (...)

de Lattre de Tassigny was arrested, we know in what circumstances. The military tribunal of Montpellier closed the Cavailles case with a dismissal [”*non-lieu*”]. But, the Prefect of Herault ordered the internment of Cavailles; He was sent to Saint-Paul-d’Eyjaux, near Limoges.

He stayed there just long enough to finish his book, and then escaped (...) during the last days of 1942. (...)

the ”Unknown n. 5”.

ON THE LOGIC AND THEORY OF SCIENCE
Jean Cavailles

To resort to psychology, Kant tells us in his (Lecture on) *Logic*, would be
"as absurd as deriving morals from life" ...